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XLIII.—*Report on the Corals from the Tizard and Macclesfield Banks, China Sea.* By P. W. BASSETT-SMITH, Surgeon R.N.

[Plates XII.—XIV.]

IN April 1888, by order of Capt. Wharton, F.R.S., Hydrographer to the Navy, a short survey was made of these interesting coral-banks by H.M.S. 'Rambler,' in charge of Commander W. U. Moore, R.N. Sectional lines were run across the margins of the banks, both from within and without, into moderately deep water, and dredging-operations were carried on, which resulted in obtaining a large collection of corals &c., which were brought to England for further examination, and subsequently presented by the Lords Commissioners of the Admiralty to the British Museum (Natural History). The corals were for the most part dredged up under my own personal superintendence, and on the return of the vessel to England I obtained permission from the Admiralty to study and arrange the collection there through the kindness of Dr. Günther, F.R.S. In the original Report of the Survey several of the corals were incorrectly specified from want of books of reference. On my return home I was enabled to devote several months to their detailed study, but should not have ventured to publish my generic and specific

determinations, if Dr. G. J. Hinde had not, at the sacrifice of much time, most kindly gone over the whole of the collection and revised my work. Owing to various circumstances the present Report is limited to an enumeration of the different species which have been determined; amongst them are many forms which in Dr. Hinde's opinion are apparently new, but a detailed description of these is delayed until they can be reexamined with the assistance of additional material, and until an opportunity can be found to figure them suitably. I have thought it desirable to subjoin some brief notes on the character of the reefs whence the corals were obtained.

The Tizard Bank (Pl. XII.) is situated in lat. 10° N., long. 114° E., near the centre of the China Sea between the Philippines and the Malay Peninsula. Like many others in the same region it is irregularly circular in outline; and it has an extreme length of 32 miles and a breadth of 10, and it is surrounded by deep water.

But with such an extended margin the only portions of the bank which project above the surface of the sea consist of three small islets, each from half a mile to one mile in length, and two very small sand-kays of about one mile each. For the greater part of the circumference of the bank, that is for 50 out of 67 miles, the rim is within 10 fathoms of the surface. On the north-east side there are two extensions of the bank, 5 and $4\frac{1}{2}$ miles in length respectively; the first of these is nearly uncovered at low water, whilst the other is at a depth of 6 fathoms.

The area of the lagoon inclosed within this bank is very extensive; it has an average depth of 40 fathoms, with a few scattered elevations here and there, the eastern end being the most shallow portion. The bottom of the lagoon is covered by a fine foraminiferal sand, and the same material extends over the floor of the narrow channels which cut through the rim and connect the lagoon with the outer sea. At depths of 6 to 10 fathoms long channels paved with this sand can be seen bounded on either side by walls of living coral.

From the central portion of this sandy floor of the lagoon, at a depth of 45 fathoms, a living Astræan coral belonging to an apparently new species of *Favia* was dredged up, thus showing the existence of these reef-building forms at depths much greater than it has been supposed they could flourish in. I may here point out that the evidence obtainable by the lead alone regarding the presence of *living* corals is entirely misleading and almost worthless. For example, judging from the observations obtained by the lead, the greater part of the corals on the surface of the Macclesfield Bank appeared

to be dead ; but the dredge with swabs attached brought up from this bank an abundance of living forms.

Of the three islets on the Tizard Bank (see Pl. XII.), that named *Sand-Kay* is the smallest and the most recent ; though it has increased in size within the last twenty years, it is still only a quarter of a mile in length. The surface is somewhat depressed in the centre ; it is entirely composed of sand and small coral débris. Surrounding the island is a platform of coral-rock half a mile broad, covered generally with sand, but here and there with patches of growing coral which increase in number as the water becomes deeper, and they grow very luxuriantly amongst the breakers on the outer edge of the platform both next the sea and next the lagoon. Just below high-water mark there are parallel lines of hard solid rock formed by coral débris and sand cemented together, and a reef at a depth of 5 fathoms extends uninterruptedly to the westward for a distance of 4 miles.

The islet of *Nam-Yit* is rather larger than *Sand-Kay* ; its highest part is not more than 12 feet above high water, and in bad weather the waves, according to the natives, break all over it. It is well covered with small trees, and the surface-soil is therefore of a brown and earthy character ; beneath this is a conglomerate of sand and small coral débris. A well, 6 feet deep, passed through loose sandy rock.

The striking parallel lines of cement-rock are well marked on both sides of this island, more particularly on the south or weather side ; they have an apparent dip of about 60° from the centre, one layer superimposed on the other. This islet is likewise surrounded by an extensive shore-platform with isolated rocks at its edge, and at its northern end there are sand-banks forming horn-shaped prolongations, which partially inclose a small lagoon ; on the open side of this, facing the lagoon, there are many rocks just below the surface.

Itu-Aba, the largest islet, is three quarters of a mile in length and covered with large trees of considerable age ; it is similarly surrounded by a shallow-water platform. Outside this, in 6 fathoms water, the number of living corals was found by the diver to be much fewer than elsewhere ; but from the reef, in 21 fathoms water, several massive specimens were obtained, and a rich variety of species was found on the lagoon side of the reef.

A comparison of the sections (Pl. XIII.) taken across different portions of the Tizard Bank shows very great similarity in the form and slope of the bank throughout. Thus in all, with the exception of section C near *Nam-Yit*, there is a broad plateau sloping very gradually to a depth of 10-12 fathoms,

on which coral-growth is most luxuriant; from the edge of this there is a more or less abrupt descent to a depth of about 30 fathoms, followed by a gradual slope to 50 fathoms; then there is an abrupt descent to 100–150 fathoms, and beyond this the average slope to deeper water is at an angle of about 30° , except in section F, near Itu-Aba, where it is somewhat less. In section C the slope of the plateau continues gradual to a depth of 30 fathoms, and in this respect is similar to the Macclesfield Bank.

The Macclesfield Bank (Pl. XIV.) is situated 300 miles to the north of the Tizard; it is 76 miles in length and 36 broad. This bank is entirely submerged; the shallowest portion of the rim is 9 fathoms beneath the surface, and inside the bank the depth is from 40 to 50 fathoms. Dredging on this bank was carried on from a small steam-cutter, but at depths of 20 to 45 fathoms there was considerable difficulty in moving the dredge with swabs attached. Living corals were found very abundantly to a depth of 30 fathoms, and some were obtained from a depth of 44 fathoms.

It will be seen from the subjoined tabular list that 129 species of Madreporal corals (Hydrocorallines and Alcyonarians are not here included) have been determined from the Tizard and Macclesfield Banks; of this number 99 species are from the Tizard and 26 from the Macclesfield Bank, whilst 4 only are common to both. Of the Madreporaria Aporosa there are 48 species, belonging to 23 genera; of the Madreporaria Fungida 23 species, included in 9 genera; and of the Madreporaria Perforata 58 species and 8 genera. The preponderance of the species of this latter division is principally due to the number of forms of the genus *Madrepora*, of which there are as many as 31 species.

An analysis of the bathymetrical distribution of these corals shows that at depths of 5 fathoms and under there are 45 species; between 5 and 10 fathoms 43 species; between 10 and 20 fathoms only 1 species; between 20 and 30 fathoms 30 species; between 30 and 40 fathoms 13 species; and between 40 and 50 fathoms 6 species. The rarity of species at depths between 10 and 20 fathoms may be accounted for by the fact that the shore-platform abruptly ceases at the upper limit of this zone, and there is a nearly vertical descent of 10 or more fathoms to a lower platform.

A very noticeable fact is the number of species which have been found living at depths of over 30 fathoms, a depth until lately supposed to be the extreme limit at which reef-building corals could exist. On these banks, however, we find 19 species occurring at depths between 31 and 45 fathoms; but

of these there are 7 species belonging to genera which may properly be considered deep-water corals rather than reef-builders; these are *Desmophyllum*, *Flabellum*, *Cyathohelia*, *Lithophyllia*, *Tridacophyllia*, and *Balanophyllia*. The remaining 12 species of reef-corals living at these unusual depths belong to the following genera:—*Stylophora*, 1 sp.; *Favia*, 1 sp. at 45 fath.; *Pavonia*, 1 sp.; *Leptoseris*, 1 sp.; *Phyllastræa*, 1 sp.; *Psammocora*, 1 sp.; *Montipora*, 3 spp. (one of these at 44 fath.); *Rhodaræa*, 1 sp.; and *Alveopora*, 2 spp.

It is also worthy of mention that five new species of the genus *Madrepora*—a genus usually limited to depths of under 10 fathoms—were found living at depths of 20 to 27 fathoms both on the Tizard and Macclesfield Banks.

Of the 18 species found growing on the coral-head inside the lagoon 15 were not found elsewhere, and the diver reported that the bottom looked different. This is rather a remarkable fact, considering the size of the lagoon and the depth of water.

Tabular List of Genera and Species of Corals obtained from the Tizard and Macclesfield Banks.

[T.=Tizard Bank. M.=Macclesfield Bank.]

		Genera and Species.	Depth in Fathoms.						
			0-5.	5-10.	10-20.	20-30.	30-40.	40-50.	50-60.
		MADREPORARIA APOROSA.							
		<i>Stylophora</i> , Schw.							
1.	T.	— <i>digitata</i> , Pallas, sp. ....	..	7					
2.	M., T.	— <i>prostrata</i> , Kunz. ....	..	.	..	26-27			
3.	T.	— <i>pistillata</i> , Esper, sp. ....	..	7					
4.	T.	— ? Ehrenbergi, E. & H.	3						
5.	M.	— <i>Guentheri</i> , sp. n. ....	..	..	..	..	32		
		<i>Seriatopora</i> , Lam.							
6.	M.	— <i>gracilis</i> , Dana ....	..	..	..	20½			
7.	T.	— <i>imbricata</i> , sp. n.	½						
8.	T.	— <i>compacta</i> , sp. n. ....	..	5¾					
9.	T.	— <i>tenuis</i> , sp. n. ....	..	6					
10.	T.	— <i>armata</i> , sp. n. ....	..	7					
		<i>Pocillopora</i> , Lam.							
11.	T.	— <i>elongata</i> , Dana	2	6¾					
12.	M., T.	— <i>verrucosa</i> , Ell. & Sol., sp. ..	1	10					
13.	T.	— <i>brevicornis</i> , Lam.	2/3-1	6½					
14.	T.	—, sp.	2						

Tabular List of Genera &c. (continued).

		Genera and Species.	Depth in Fathoms.						
			0-5.	5-10.	10-20.	20-30.	30-40.	40-50.	50
		Flabellum, <i>Lesson.</i>							
15.	T.	— Stokesi, <i>E. & H.</i> .....	..	..	..	..	40		
		Desmophyllum, <i>Ehrenberg.</i>							
16.	M.	—, sp. ....	..	..	..	..	32		
		Cyathohelia, <i>E. & H.</i>							
17.	T.	— axillaris, <i>Ell. & Sol.</i> .....	..	..	..	..	..	50	
		Lithophyllia, <i>E. & H.</i>							
18.	M.	— lacrymalis, <i>E. & H.</i> .....	..	..	..	..	..	44	
19.	T.	—, sp. ....	..	..	..	26			
		Tridacophyllia, <i>Blainv.</i>							
20.	T.	— cervicornis, <i>Moseley</i> .....	..	..	..	..	..	50	
		Galaxea, <i>Oken.</i>							
21.	T.	— æqualis, sp. n. ....	..	6					
		Symphyllia, <i>E. & H.</i>							
22.	T.	— radians	2						
23.	T.	— labyrinthica, sp. n.	5						
		Mussa, <i>Oken.</i>							
24.	T.	— multilobata, <i>Dana</i>	5						
25.	T.	— sinuosa, <i>Lam.</i> .....	..	6					
		Meandrina, <i>Lam.</i>							
26.	T.	— strigosa ^p , <i>Dana</i>	2						
27.	T.	— dædalea, <i>Ell. & Sol.</i> , sp.	2-4						
		Leptoria, <i>E. & H.</i>							
28.	T.	— phrygia, <i>Ell. & Sol.</i> , sp. ....	..	6					
		Scaphophyllia, <i>E. & H.</i>							
29.	T.	— cylindrica, <i>E. & H.</i> .....	..	6					
		Hydnophora, <i>Fischer.</i>							
30.	T.	— microcona, <i>Lam.</i> , sp. ....	..	6					
31.	T.	— rigida, <i>Dana</i> , sp. ....	..	6					
		Favia, <i>Oken.</i>							
32.	T.	— denticulata (?), <i>Ell. & Sol.</i> , sp. ....	..	7					
33.	T.	— Okeni, <i>E. & H.</i> .....	..	7					
34.	T.	— Ehrenbergi, var. sulcata, <i>Kl.</i> ..	5						
35.	T.	— pandanus, <i>Dana</i> , sp.	2						
36.	T.	— rotulosa, <i>Ell. & Sol.</i> , sp.	2						
37.	T.	—, sp. ....	..	..	..	..	..	45	
		Goniastrea, <i>E. & H.</i>							
38.	T.	— Bournoni, <i>E. & H.</i>	2						
		Prionastrea, <i>E. & H.</i>							
39.	T.	— obtusata, <i>E. & H.</i>	2						
40.	T.	— spinosa, <i>Kl.</i>	$\frac{1}{2}$						
41.	T.	— robusta, <i>Dana</i> , sp.	2						
		Plesiastrea, <i>E. & H.</i>							
42.	T.	— Urvillei, <i>E. & H.</i> .....	..	6					
		Cyphastrea, <i>E. & H.</i>							
43.	T.	— Brueggemanni, <i>Quelch</i>	5						

Tabular List of Genera &c. (continued).

		Genera and Species.	Depth in Fathoms.						
			0-5.	5-10.	10-20.	20-30.	30-40.	40-50.	50-60.
		<i>Leptastræa</i> , <i>E. & H.</i>							
44.	T.	— <i>Ehrenbergana</i> (?), <i>E. & H.</i> ..		7					
45.	T.	— <i>solida</i> , <i>E. & H.</i> , sp.		6					
		<i>Orbicella</i> , <i>Dana</i> .							
46.	T.	— <i>annuligera</i> , <i>E. & H.</i>	5	10					
47.	T.	—, sp.		7					
		<i>Echinopora</i> , <i>Lam.</i>							
48.	T.	— <i>rosularia</i> , <i>Lam.</i>		6					
		 MADREPORARIA FUNGIDA.							
		<i>Siderastræa</i> , <i>Blainv.</i>							
49.	T.	— (?), sp. n.		6					
		<i>Fungia</i> , <i>Lam.</i>							
50.	T.	— <i>scutaria</i> , <i>Lam.</i>	$\frac{1}{2}$						
		<i>Paronia</i> , <i>Lam.</i>							
51.	M.	— <i>papyracea</i>					40		
52.	T.	— <i>pretiosa</i> , sp. n.				27			
53.	M.	— <i>ramosa</i> , sp. n.				26			
54.	T.	— <i>clivosa</i> , <i>Verr.</i>		8-10					
55.	M.	—, sp.				26 $\frac{1}{3}$			
56.	M.	—, sp. n.				20 $\frac{1}{2}$			
		<i>Cycloseris</i> , <i>E. & H.</i>							
57.	T.	— <i>cyclolites</i> , <i>Lam.</i> , sp.				28			
58.	T.	— <i>tenuis</i> , <i>Dana</i> , sp.				27-28			
59.	M.	— <i>sinensis</i> , <i>E. & H.</i>				26			
60.	T.	— <i>Freycineti</i> , <i>E. & H.</i> , sp.				27			
61.	T.	— <i>distorta</i> , <i>Mich.</i> , sp.				28			
		<i>Leptoseris</i> , <i>E. & H.</i>							
62.	T.	— <i>striatus</i> , <i>MS.</i> (?)					35		
63.	T.	—, sp.				28			
		<i>Phyllastræa</i> , <i>Dana</i> .							
64.	T.	— <i>Okeni</i> (?), <i>E. & H.</i> , sp.					32		
65.	M.	— <i>tubifex</i> , <i>Dana</i>				26 $\frac{1}{2}$			
		<i>Pachyseris</i> , <i>E. & H.</i>							
66.	M.	— <i>levicollis</i> , <i>Dana</i> , sp.				26 $\frac{1}{2}$			
		<i>Oxypora</i> , <i>Sav. Kent.</i>							
67.	M.	— <i>contorta</i> , <i>Quelch</i>				26			
		<i>Psammocora</i> , <i>Dana</i> .							
68.	M.	— <i>planipora</i> (?), <i>E. & H.</i>				26-32			
69.	M.	—, sp.				27			
70.	T.	— <i>Haimeana</i>		6					
71.	T.	Gen. et sp. ind.		6					

Tabular List of Genera &c. (continued).

		Genera and Species.	Depth in Fathoms.						
			0-5.	5-10.	10-20.	20-30.	30-40.	40-50.	50-60.
MADREPORARIA PERFORATA.									
		Balanophyllia, <i>Searles Wood</i> .							
72.	T.	— parvula?, <i>Moseley</i> .....	..	..	..	..	..	50	
73.	T.	— scabrosa (?), <i>Dana</i> , sp. ....	..	..	..	..	40		
		Dendrophyllia, <i>Blainv.</i>							
74.	T.	— gravis, <i>Brugg. MS.</i> ? .....	..	..	..	26			
		Montipora, <i>Quoy et Gaim.</i>							
75.	T.	— papillosa, <i>Lam.</i> , sp. ....	..	..	..	25			
76.	M.	— foliosa, <i>Pallas</i> , sp. ....	..	..	..	20½			
77.	M.	— prolifica, <i>Brugg. MS.</i> ? .....	..	..	..	26½			
78.	M.	— lima (?), <i>Lam.</i> , sp. ....	..	..	..	26½			
79.	T.	—, sp. ....	..	8¼					
80.	T.	— Danae, <i>E. & H.</i>	½						
81.	M.	—, sp. ....	..	..	..	..	40		
82.	M.	— porosa, sp. n. ....	..	..	..	..	35		
83.	M.	—, sp. ....	..	..	..	..	..	44	
		Turbinaria, <i>Oken</i> .							
84.	T.	— stellulata, <i>Blainv.</i> , sp. var. .	5-10						
		Madrepora, <i>Linn.</i>							
85.	T.	— robusta, <i>Dana</i>	5						
86.	T.	— crebripora, <i>Dana</i>	½						
87.	T.	— secunda, <i>Dana</i>	5						
88.	T.	— scabrosa, <i>Quelch</i> .....	..	6½					
89.	T.	— horrida, <i>Dana</i>	2						
90.	T.	— Ehrenbergi, <i>E. & H.</i>	5						
91.	M., T.	— dendrum, sp. n. ....	..	..	20	27			
92.	T.	— compressa, sp. n.	5						
93.	M.	—, sp. n. ....	..	..	..	26½			
94.	T.	— plantaginea, <i>Lam.</i> .....	..	6					
95.	T.	— valida, <i>Dana</i> .....	..	6					
96.	T.	— paxilligera, <i>Dana</i>	1						
97.	M., T.	— pyramidalis, <i>Kl.</i>	2						
98.	T.	— seriata, <i>Ehrenb.</i> , sp.	2						
99.	T.	— tenuis, <i>Dana</i>	1						
100.	T.	— nasuta, <i>Dana</i>	5						
101.	T.	— effusa, <i>Dana</i>	5						
102.	T.	— globiceps, <i>Dana</i> .....	..	7					
103.	T.	— acervata, <i>Dana</i> .....	..	8½					
104.	T.	— aculeus, <i>Dana</i> .....	..	8½					
105.	T.	— corymbosa, <i>Lam.</i> .....	..	5½-9½					
106.	T.	— prostrata, <i>Dana</i> .....	..	6½					
107.	T.	— cytherea (?), <i>Dana</i> .....	..	6					
108.	T.	— efflorescens, <i>Dana</i> .....	..	6					
109.	T.	— spicifera (var. abbreviata), <i>Dana</i> .....	..	5					

Tabular List of Genera &c. (continued).

		Genera and Species.	Depth in Fathoms.						
			0-5.	5-10.	10-20.	20-30.	30-40.	40-50.	50-60.
110.	T.	— hyacinthus, <i>Dana</i> .....	..	9½					
111.	T.	— vastula (?), <i>Quelch</i> .....	..	7					
112.	T.	— flabelliformis, <i>E. & H.</i> , var.	2						
113.	T.	— labrosa, <i>Dana</i>	5						
114.	T.	— fragilis, sp. n. ....	..	..	..	27			
115.	M.	— Rambleri, sp. n. ....	..	..	..	26½			
116.	M.	— Rambleri, var. ....	..	..	..	20½			
		Porites, <i>Lam.</i>							
117.	T.	— mucronata, <i>Dana</i>	½						
118.	T.	— conferta, <i>Dana</i>	2½						
119.	T.	— lutea, <i>Quoy et Gaim.</i>	½						
120.	T.	— tenuis, <i>Verr.</i>	½						
121.	T.	— arenosa, <i>Esper</i> , sp.	2-6						
122.	T.	— lichen (?), <i>Dana</i>	2½						
123.	T.	— solida, <i>Forsk.</i> , sp.	2						
124.	T.	— crassa (?), <i>Quelch</i> .....	..	7					
		Rhodaræa, <i>E. & H.</i>							
125.	T.	— gracilis, <i>E. & H.</i>	2						
126.	M.	— (?) <i>Lagrenii</i> ?, <i>E. & H.</i> ....	..	..	..	..	40		
		Alveopora, <i>Quoy et Gaim.</i>							
127.	M.	— dædalea, <i>Forsk.</i> , sp. ....	..	..	..	27-40			
128.	M.	— retepora, <i>Ell. & Sol.</i> , sp. ....	..	..	..	..	35		
129.	T.	— Tizardi, sp. n. ....	..	..	..	27			

References to Genera and Species.

MADREPORARIA.

Section MADREPORARIA APOROSA, Ed. & H.

Genus STYLOPHORA, Schweigger.

Stylophora digitata, Pallas, sp.*Madrepora digitata*, Pallas, Elench. Zooph. p. 326.

Two fragmentary specimens.

Tizard Bank. Depth from 3 feet to 7 fath.

Stylophora prostrata, Klunz.1879. *Stylophora prostrata*, Die Korallth. des rothen Meeres, Th. ii. p. 62, pl. vii. fig. 8, pl. viii. fig. 7.

Two specimens were obtained.

Tizard and Macclesfield Banks. Depth 26-27 fath.

Stylophora pistillata, Esper, sp.

1797. *Madrepora pistillata*, Esper, *Madre.* pl. lx.

A single fragment doubtfully belonging to this species.
Tizard Bank, 7 fath.

Stylophora (?) *Ehrenbergi*, E. & H.

1859. *Stylophora Ehrenbergi*, E. & H., *Ann. des Sci. Nat.* 3^e sér. t. xiii. p. 105.

A small fragment was obtained which apparently belongs to this species. It is doubtful, however, whether the form can properly be retained in the genus *Stylophora*, since there is apparently no cœnenchyma and in character the septa much resemble those of an Astræan coral.

Tizard Bank, 3 fath.

Stylophora Guentheri, sp. n.

Corallum incrusting, growing in thin successive layers over foreign objects; upper surface uneven, with nodose projections. Base with wrinkled epitheca formed of delicate concentric lines. The layers from 1 to 3·5 millim. in thickness. Calices circular, without regular arrangement, not projecting, but on a level with the general surface; no definite lip developed. The calices from ·8 to 1 millim. in diameter, from ·3 to 1 millim. apart, usually four in 5 millim., rarely five in this distance. The septa delicate, six small as well as the six large can be recognized, the free edges markedly dentate. Columella styliform, prominent, reaching nearly to the level of the calice. Interspaces between the calices thickly beset with minute blunt spines. In places fine lines can be seen in the interspaces, marking polygonal outlines of the corallite. Occasionally there is a small papilla-like prominence on one side of a calice apparently connected with one of the large septa; but this character does not appear to be general.

This species is characterized by its incrusting mode of growth, the small size and insert character of the calices, and the strongly dentate septa. Two specimens were obtained, one (alive) from a depth of 32 fath., the other (dead) from a depth of 22 fathoms.

Macclesfield Bank, China Seas, 22 and 32 fathoms.

Genus *SERIATOPORA*, Lam.*Seriatopora gracilis*, Dana.

1848. *Seriatopora caliendrum*, var. *gracilis*, Dana, U. S. Explor. Expedition, Zoophytes, p. 522, pl. xlix. fig. 4.

1875. *Seriatopora gracilis*, Dana, Corals and Coral Islands, p. 334.

There are three fragmentary specimens which do not fully agree with Dana's description; but the differences do not appear sufficient to justify placing them in a new species. They form bushy masses of very slender branches from 2.5 to 3 millim. in thickness in the lower part, the terminal branchlets acutely pointed, slightly winged at their apices, from 2 to 5 millim. long and about 1 millim. thick at the base. Branches round to subangular, divergently bifurcating in lower portions of the colony and giving off antler-like spikes. Calices in five series, circular to oval, from .4 to .5 millim. in width, sometimes without prominent lips, at others the upper lip projecting; distance from each other in rows variable, from .3 to .6 millim.; there are from five to six calices in a length of 5 millim. Septa not recognizable, columella visible but not prominent. Spaces between the rows abundantly covered with acute spines.

From Dana's figured type these specimens differ in the less upright and more divergent mode of growth and the slightly winged apices of the branchlets. They differ materially from the form referred by Quelch to this species ('Challenger' Report, vol. xvi. p. 58), which has calices of about twice the size mentioned by Dana.

Macclesfield Bank, 20½ fath.

Seriatopora imbricata, sp. n.

Corallum forming fairly large bushy masses; branches dichotomizing at intervals, occasionally a distance of 15 millim. between the furcations, branches sometimes coalescing. The summit-branches furcating and giving off short, pointed, divergent apical spikes, not winged, about 2 millim. thick at their bases. Branches in lower portion about 4 millim. in thickness, distinctly subangular, the calices in five series on the angles. Calices transversely suboval, with their upper lips very prominent and strongly arching over the aperture, very spinous; in the lower branches the upper lip hardly at all developed. The calices about .6 millim. in diameter, very closely arranged in the rows, so that there are seven in the space of 5 millim. The interspaces between the calices flattened, sometimes 1 millim. in width, closely covered with

short stout spines, which are in places disposed in longitudinal wavy lines.

There is only a single specimen of this species ; it is 120 millim. in height and 140 in width, but the lower portion of it was dead when dredged and the branches are hollowed out by boring-sponges and incrustated by Nullipores.

In its mode of growth and in the prominent lip of the calices this form belongs to the same group as *S. angulata*, Kl., *S. pacifica*, Brugg., and *S. spinosa*, M.-Edw. It approaches nearest to *S. angulata*, but the calices are much smaller and closer arranged in the rows than in this species, and the branches are less acuminate.

There are in this specimen several instances of those peculiar abnormalities of growth which Ehrenberg compared to galls in plants. They assume the form of flattened hollow disks, with thin walls formed of the coral ; the margins of the disks are perforated. Imprisoned within each of these discoid cages is a small crab which cannot escape.

From the Tizard Bank, at a depth of $\frac{1}{2}$ fath.

Seriatopora compacta, sp. n.

Corallum growing in small clumps consisting of rounded or somewhat compressed branches about 6 millim. thick, which dichotomize at intervals of from 5 to 7 millim. and frequently coalesce, so that the coral has a fenestrate appearance. The summit branchlets are short, from 3 to 5 millim., conical, about 2 millim. thick at their bases, summits obtuse, occasionally winged, crowded with young calices. Calices closely arranged on branches ; the serial arrangement is not distinct, but there appear to be about nine rows on a branch ; the calices are from 2 to 3 millim. apart in the rows and about an equal distance laterally ; there are from five to six calices in a length of 5 millim. The calices are nearly circular, from .6 to .75 millim. in width, their margins scarcely at all prominent, but the upper lip is occasionally indicated by longer spines. The calices are deep and the large septa and the pits at the bottom can be distinguished. The narrow interspaces between the calices are covered with short spines.

This species is of the type of *S. crassa*, Quelch, and *S. transversa*, Quelch, but differs from these forms in having less robust and closer arranged branches, whilst the calices are larger and closer together.

Only two imperfect examples of this species have been obtained ; the largest is 40 millim. in height by 60 in width.

Tizard Bank, $5\frac{3}{4}$ fath.

Seriatopora tenuis, sp. n.

Corallum forming small bushy masses of closely arranged branches, which in the lower portions are subpalmate, but above cylindrical; they are from 4 to 5 millim. in thickness, bifurcating at intervals of from 5 to 7 millim.; the apical branchlets depressed, conical, winged, so as to show the rows of calices very distinctly; they are 4 to 5 millim. in length by 2.5 millim. thick at their bases. Calices nearly circular, .6 millim. in diameter, without projecting lip, from .2 to .4 millim. apart in rows, or five calices in 5 millim. There are seven or eight rows on the branches, the rows about .4 millim. apart. Calices deep, showing a sharp thin edge of the axial septa, with occasionally a columellar tubercle slightly rising from the centre, the calicinal pits well shown. Intermediate space finely spinous.

This species approaches closely to *S. compacta*, but the branches are more slender; the calices are smaller, and they are in fewer rows. There is a single fairly complete specimen 40 millim. in height by 75 millim. in width.

Tizard Bank, 6 fath.

Seriatopora armata, sp. n.

Corallum growing in low depressed clumps of delicate thickly-set branches, from 3 to 4 millim. in thickness, somewhat compressed in their lower portions, bifurcating at intervals of about 5 millim., and frequently coalescing. Near the summit the branches furcate more frequently and give off numerous short spike-like branchlets, conical, acute, winged, and from 3 to 5 millim. long by 1.5 millim. thick at their bases. Calices in five rows on the branches, oval, about .75 millim. long by .6 wide, about 3 millim. apart in the rows; margins well marked by stout spines but not exsert. There are five calices in 5 millim. and the rows are about .6 millim. apart. Calices showing the axial septa distinctly, in the centre a slight crestiform elevation (columella?). Areas between the calices with short spines which have sometimes a linear arrangement.

There is only a single perfect example of this species, which is 35 millim. in height and about 90 wide across the summit. In its mode of growth and in the character of the calices this form approaches *S. compacta* and *S. tenuis*; but its branches are more delicate, the rows of calices are fewer, and the surface more spinous; the numerous short apical branchlets is also a distinguishing feature.

Tizard Bank, 7 fath. On block of coral-rock in association with specimens of *Madrepora*, *Favia*, &c.

Genus POCILLOPORA, Lam.

The examples of this species are fairly numerous; with one exception, which was found in 26 fathoms, they have all been obtained in depths under 10 fathoms. The specific determination of these forms is extremely difficult; the definitions given by Lamarck, Edwards and Haime, and other older authors are so general that it is impossible to know what they include; and, on the other hand, the variations in the characters of the corallites appear to be so slight in the different forms that they may almost be considered as forming a continuous series separated only by slight modifications in their mode of growth. In the absence of authenticated specimens of known species the list given below can only be regarded as provisional.

Pocillopora elongata, Dana.

1848. *Pocillopora elongata*, Dana, Zoophytes, p. 531, pl. 50. fig. 4.

Three specimens from depths of 2–6 $\frac{3}{4}$ fath.
Tizard Bank.

Pocillopora verrucosa, Ell. & Sol., sp.

1786. *Madrepora verrucosa*, Ell. & Sol. Nat. Hist. Zooph. p. 172.

1836. *Pocillopora verrucosa*, Lam. Hist. des Anim. sans Vertèbr. éd. 2, t. ii. p. 443.

There are several examples of this species, which appears to have flourished all over the reef. Depth 1–10 fathoms.
Tizard and Macclesfield Banks.

Pocillopora brevicornis, Lam.

1836. *Pocillopora brevicornis*, Lam. Hist. des Anim. sans Vertèbr. éd. 2, t. ii. p. 443.

1848. *Pocillopora brevicornis*, Dana, Zooph. p. 526, pl. xlix. fig. 8.

Several examples from depths $\frac{2}{3}$ –1 fath.; one specimen 6 $\frac{1}{2}$ fath.
Tizard Bank.

Pocillopora, sp.

A single specimen, which in its mode of growth resembles *P. brevicornis*; but the branches are considerably thicker and the corallites somewhat larger.

Garvan Reef, Tizard Bank, 2 fath.

Genus FLABELLUM, Lesson.

Flabellum Stokesi, Ed. & Haime.

1848. *Flabellum Stokesi*, E. & H. Ann. des Sc. Nat. 3^e sér. t. ix. p. 278, pl. viii. fig. 12.

One dead specimen, probably referable to this species.
Tizard Bank, 40 fath.

Genus DESMOPHYLLUM, Ehrenberg.

Desmophyllum, sp.

A single small example of this genus taken alive ; it may be a young form of an undescribed species. The coral is attached by a short curved stem and a spreading base. The calice is elliptical in outline, 18 millim. long by 10 millim. wide, and about 19 millim. in height. There are about forty septa ; ten of these are subequal and principal, reaching to the centre of the calice, where their inner, free, lateral margins slightly curve round ; the septa are thin and furnished laterally with minute spines. Between each pair of the larger septa there are three smaller secondary septa which project but a short distance from the wall. The costæ of the larger septa project slightly as sharp-edged ribs on the exterior.

Macclesfield Bank, 32 fath.

Genus CYATHOHELIA, Ed. & H.

Cyathohelia axillaris, Ell. & Sol.

1786. *Madrepora axillaris*, Ell. & Sol. Nat. Hist. Zooph. p. 153, pl. xiii. fig. 5.

A single specimen, living, was obtained from the Tizard Bank, depth 50 fath.

Genus LITHOPHYLLIA, Ed. & H.

Lithophyllia lacrymalis, Ed. & H.

1848. *Caryophyllia lacrymalis*, E. & H. Ann. des Sci. Nat. 3^e sér. t. x. p. 319, pl. viii. fig. 1.

1857. *Lithophyllia lacrymalis*, E. & H. Hist. Nat. des Corall. vol. ii. p. 292.

A single specimen, dead, attached to a nodule of *Lithothamnion*.

Macclesfield Bank, depth 44 fath.

Lithophyllia, sp.

A living specimen, but much broken. It has a wide surface of attachment; the coral is short, subcircular, and widely expanded; septa in four cycles, upper margins dentate or lobate and finely crenulate, costæ echinulate.

Tizard Bank, depth 26 fath.

Genus TRIDACOPHYLLIA, Blainville.

Tridacophyllia cervicornis, Moseley.

1881. *Tridacophyllia cervicornis*, Moseley, Chall. Report, Zool. vol. ii. p. 183, pl. x. figs. 2, a, b, c, Ba.

A single specimen, living, 11 millim. in height by 9 in width, growing attached by a spreading base and short peduncle.

From the Tizard Bank, depth 50 fathoms.

This is the first time that a locality and depth have been recorded for this species, these not being known for the type form described by Moseley.

Genus GALAXEA, Oken.

Galaxea aequalis, sp. n.

Corallum forming extended masses with flattened or slightly convex surfaces. Calices very regular in height and distance from each other, circular, subcircular, or slightly compressed, so as to become subpolygonal, from 3·5 to 5 millim. in diameter at the summit. From twenty to twenty-four septa in three cycles, the septa varying in size according to the cycle, thick at the peripheral margin, becoming thin towards the free internal margins, strongly exsert. Low down the septal margins unite and form a perforate pseudocolumella. Lateral surfaces of the septa with numerous minute spines. The costæ formed by the peripheral margins of the septa, which can be distinguished individually. The calices are only from 1·5 to 2 millim. apart, and they project about 10 millim. above the platform of the cœnenchyma. The vesicles of the cœnenchyma small, from ·5 to ·75 millim. apart; at intervals compact platforms appear to be formed which grow over the former surfaces.

This species is allied to *G. Esperi*, Schweig., and *G. Ellisii*, E. & H., but is distinguished by the close arrangement of the corallites and their short extension above the cœnenchyma.

Only a single specimen was obtained, which is about 50 millim. in width at the summit and .45 millim. in thickness; but the mass below the summit-platform of coenenchyma is apparently dead and extensively eaten into by sponges.

East lagoon, Tizard Bank, 6 fath.

Genus SYMPHYLLIA, Edw. & Haime.

Symphyllia radians, E. & H.

1849. *Symphyllia radians*, E. & H. Ann. des Sci. Nat. 3^e sér. t. xi. p. 255.

A single specimen from the Garvan Reef, Tizard Bank, depth 2 fath.

Symphyllia labyrinthica, sp. n.

Corallum large, massive, rudely inverted, conical, with plane or slightly convex surface. Lateral and under surface with longitudinal striæ, apparently not spinous, this surface usually covered by attached organisms quite close to the upper margin. Upper surface of sinuous labyrinthine calicinal series, the walls completely amalgamated, with no traces of grooves between. Width of calices 13 to 15 millim., depth 8 millim. There are usually two septa connecting the calicinal centres, sometimes traces of a third, sometimes only one is present. There are about fourteen large and small septa in the distance of 10 millim., the large septa with prominent spinous teeth, the smaller serrate or unequally jagged.

There is but a single specimen, which is 7.5 centim. in height and 25 centim. across the surface.

This species is nearest allied to *S. agaricia*, E. & H., and to *S. acuta*, Quelch, but from these it is readily distinguished by the narrowness and less depth of the calicinal valleys. It has been compared with *S. neglecta*, a MS. species in the British Museum, but its mode of growth and other features readily distinguish it from the type of this form.

Tizard Bank, 5 fath.

Genus MUSSA, Oken.

Mussa multilobata, Dana (non Ed. & H.).

1848. *Mussa multilobata*, Dana, Zoophytes, p. 181, pl. viii. fig. 2.

A single specimen, 70 millim. in height and 170 millim. across the summit.

Tizard Bank (section C), 5 fath.

Ann. & Mag. N. Hist. Ser. 6. Vol. vi.

Mussa sinuosa, Lamarck.

1816. *Caryophyllia sinuosa*, Lam. Anim. sans Vert. éd. 1, t. ii. p. 229, éd. 2, t. ii. p. 357.

A single specimen, probably a young form ; it is 20 millim. in height by 60 in width above.

Tizard Bank, 6 fath.

Genus MEANDRINA, Lamarck.

Meandrina strigosa?, Dana.

1848. *Meandrina strigosa*, Dana, Zoophytes, p. 257, pl. xiv. fig. 4.

A single specimen, cylindrical, truncate, gyri about 6 millim. in width and 3·5 millim. deep, about fifteen septa in 10 millim. Referred doubtfully to this species, which, according to Quelch, can be seen to vary considerably in its characters when a large series of forms is examined.

East of Nam-Yit, Tizard Bank, 2 fathoms.

Meandrina dædalea, Ell. & Sol., sp.

1786. *Madrepora dædalea*, Ell. & Sol. Nat. Hist. Zoophytes, p. 163, pl. xlv. fig. 1.

Two specimens. Sand-Kay, Nam-Yit, Tizard Bank, 2-4 fathoms.

Genus LEPTORIA, Ed. & H.

Leptoria phrygia, Ell. & Sol., sp.

1786. *Madrepora phrygia*, Ell. & Sol. Nat. Hist. Zoophytes, p. 162, pl. xlviii. fig. 2.

One specimen from the Tizard Reef, depth 6 fath.

Genus SCAPOPHYLLIA, Ed. & H.

Scapophyllia cylindrica, Ed. & H.

1849. *Scapophyllia cylindrica*, Edw. & Haime, Ann. des Sci. Nat. 3^e sér. t. x. pl. viii. fig. 8, and t. xi. p. 278.

One specimen from lagoon, Tizard Bank, depth 6 fath.

The specimen is depressed, spreading, with irregular lobate slight elevations. The calicinal valleys are much curved, 4 millim. in width and about 2·5 millim. in depth ; septa thin, with frilled edges. The so-called columella consists of irregular tooth-like projections from the free edges of the septa.

The description of this species states that it is cylindro-conical in form; but in what appears to be a genuine specimen of it in the British Museum there is a spreading basal platform, with here and there elevations, some of which are subcylindrical and rise to a considerable height. In the present specimen the subcylindrical portions are not developed.

Genus HYDNOPHORA, Fischer de Waldheim.

Hydnophora microcona, Lam., sp.

1816. *Monticularia microconos*, Lam. Hist. des Anim. sans Vert. t. ii. p. 251, 2nd ed. (1836) p. 393.

1786. *Madrepora exesa*, Ell. & Sol. (non Pallas), Zoophytes, p. 161, pl. xlix. fig. 3.

A single specimen of this species from the east lagoon, Tizard Bank, China Seas, at a depth of 6 fath.

Hydnophora rigida, Dana, sp.

1846. *Merulina rigida*, Dana, Expl. Exp. Zoophytes, p. 276, pl. xvii. fig. 1.

A single specimen from the east lagoon, Tizard Bank, at a depth of 6 fath.

Genus FAVIA, Oken.

Favia denticulata?, Ell. & Sol., sp.

1786. *Madrepora denticulata*, Ell. & Sol. Nat. Hist. Zoophytes, p. 166, pl. xlix. fig. 1.

A small specimen incrusting the base of a Madrepore. Tizard Bank, 7 fath.

Favia Okeni, Ed. & H.

1857. *Favia Okeni*, Ed. & H. Hist. Nat. des Corall. t. ii. p. 430.

A small specimen on the same block of rock with the preceding species.

Tizard Bank, 7 fath.

Favia Ehrenbergi, Klunz., var. *sulcata*, Klunz.

1879. *Favia Ehrenbergi*, Klunz. Die Korallth. des rothen Meeres, Th. iii. p. 29, Taf. iii. fig. 8 (var. *sulcata*).

Tizard Bank, 5 fath.

Favia pandanus, Dana, sp.

1848. *Astræa pandanus*, Dana, Expl. Exp. Zooph. p. 222, pl. xi. fig. 2.
Tizard Bank, 2 fath.

Favia rotulosa, Ell. & Sol., sp.

1786. *Madrepora rotulosa*, Ell. & Sol. Nat. Hist. Zooph. p. 166, pl. lv.
Garvan Reef, Tizard Bank, 2 fath.

Favia, sp.

A portion of a specimen 80 by 50 millim. was dredged up in a bag full of foraminiferous sand from the centre of the lagoon, Tizard Bank, at a depth of 45 fathoms. There were sixteen bright green living polyps on it, each with twelve yellow tentacles. Calices circular or irregularly oval, about 8 millim. wide, furrow between them well marked, septa with prominent denticles.

Tizard Bank, 45 fath.

Genus GONIASTRÆA, Ed. & H.

Goniastrea Bournoni, E. & H.

1850. *Goniastrea Bournoni*, E. & H. Ann. des Sci. Nat. 3^e sér. t. xii. p. 162.

A single specimen, taken alive, from Itu-Aba, depth 2 fath. Tizard Reef.

Genus PRIONASTRÆA, Ed. & H.

Prionastrea obtusata, Ed. & H.

1850. *Prionastrea obtusata*, E. & H. Ann. des Sci. Nat. 3^e sér. t. xii. p. 130.

One specimen only, taken alive.
Garvan Reef, Tizard Bank, 2 fath.

Prionastrea spinosa, Klunzinger.

1879. *Prionastrea spinosa*, Klunz. Die Korallenth. des roth. Meeres, Th. iii. p. 39, Taf. iv. fig. 7.

One specimen only. Nam-Yit, Tizard Bank, $\frac{1}{2}$ fath.

Prionastræa robusta, Dana, sp.

1848. *Astræa robusta*, Dana, Expl. Exp. Zooph. p. 248, pl. xiii. fig. 10.
Tizard Reef, 2 fath.

Genus PLESTIASTRÆA, Ed. & H.

Plesiastrea Urvillei, Ed. & H.

1850. *Plesiastrea Urvillei*, Ed. & H. Ann. des Sci. Nat. 3^e sér. t. x.
pl. ix. fig. 2, and t. xii. p. 117.

Tizard Bank, 6 fath.

Genus CYPHASTRÆA, Ed. & H.

Cyphastræa Brueggemanni, Quelch.

Cyphastræa Brueggemanni, Quelch, Chall. Report, Reef-Corals, p. 106.

Tizard Bank, 5 fath.

Genus LEPTASTRÆA, Ed. & H.

Leptastrea Ehrenbergiana?, Ed. & H.

1850. *Leptastrea Ehrenbergiana*, E. & H. Ann. des Sci. Nat. 3^e sér.
t. xii. p. 120.

A small incrusting lobed specimen, which approaches close to the above species; but it does not exhibit the deformed corallites, which are stated to be usually present. From *L. transversa*, Kl., it differs in the character of the columella.

Tizard Bank, 7 fath.

Leptastrea solida, Ed. & H., sp.

1850. *Baryastrea solida*, Ed. & H. Ann. des Sci. Nat. 3^e sér. t. xii.
p. 144.

Tizard Bank, 6 fath.

Genus ORBICELLA, Dana.

Orbicella annuligera, Ed. & H., sp.

1880. *Astræa annuligera*, E. & H. Ann. des Sci. Nat. 3^e sér. t. xii.
p. 103.

Tizard Bank, 5-10 fath.

Orbicella, sp.

A small incrusting specimen on mass of coral with Madre-pore and other species of corals.

Tizard Bank, 7 fath.

Genus ECHINOPORA, Lam.

Echinopora rosularia, Lam.

1816. *Echinopora rosularia*, Lam. Hist. des Anim. sans Vertèbr. éd. 2, t. ii. p. 397.

Lagoon, Tizard Bank, 6 fath.

[To be continued.]

XLIV.—*Descriptions of new Species of Pedaria, with Observations on allied Scarabæidæ.* By CHARLES O. WATERHOUSE.

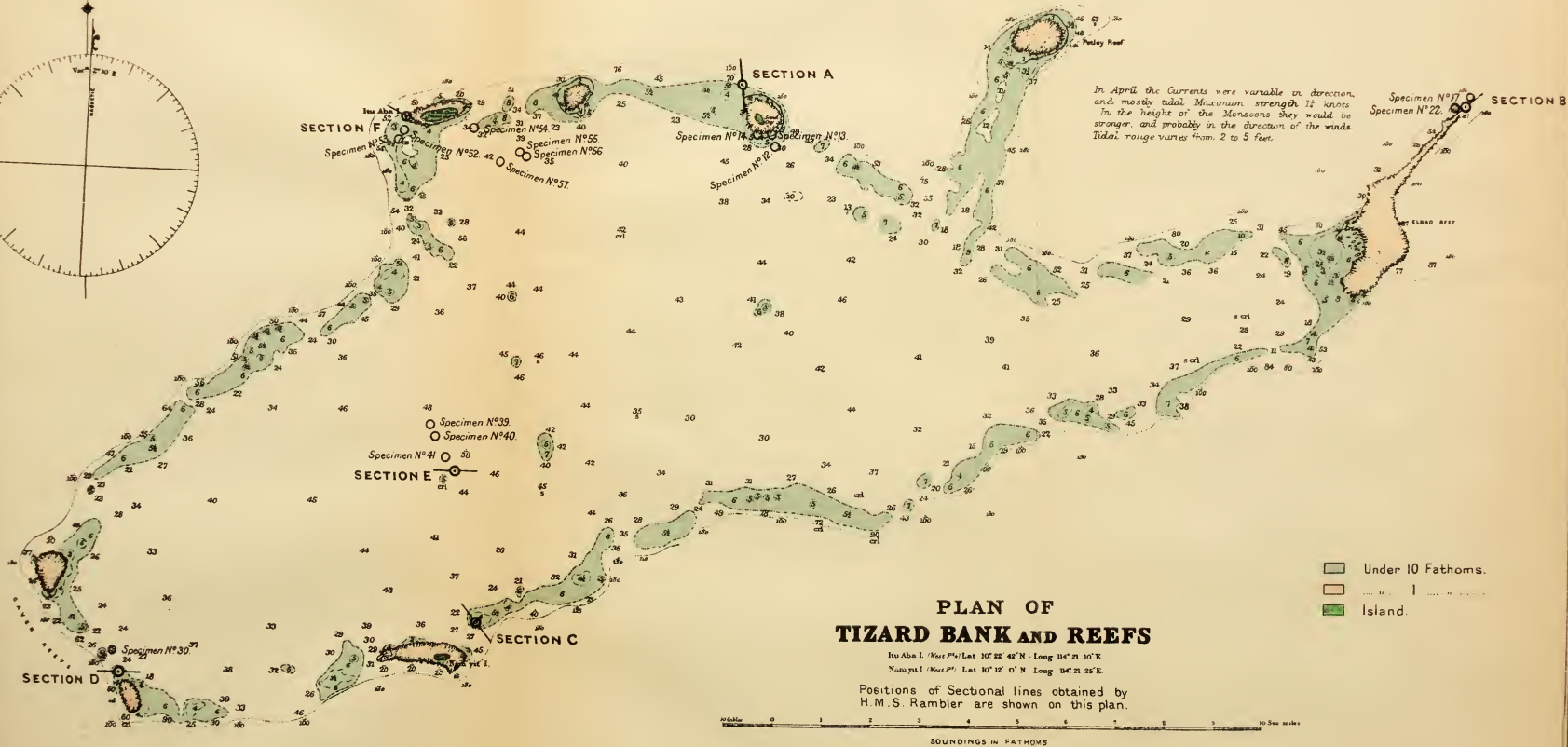
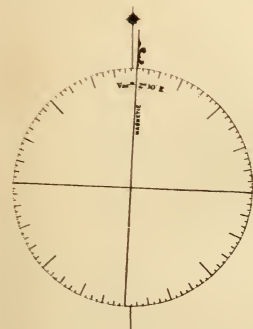
Pedaria tuberculigera, sp. n.

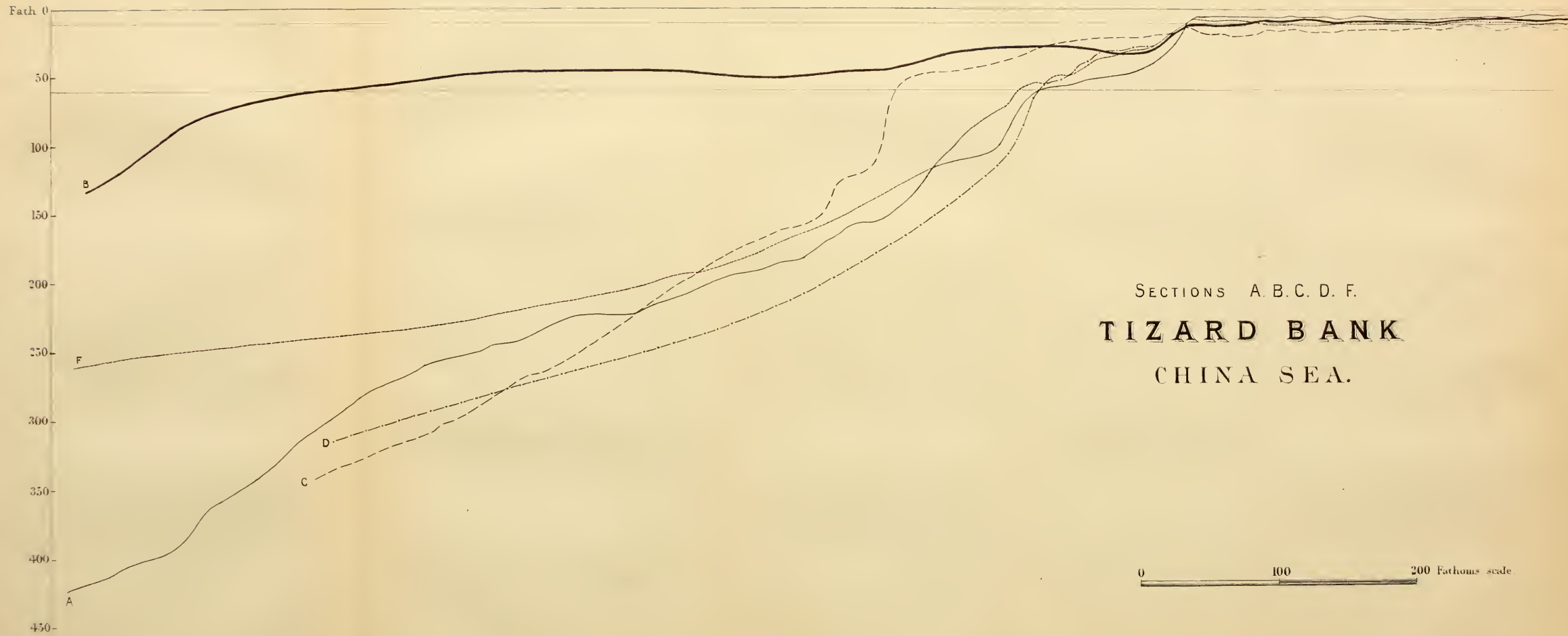
Elongato-oblonga, nigro-fusca, parum nitida, clypeo leviter emarginato; thorace confertim sat fortiter punctato, antice tumiditate ovali sat elevata parcius subtiliter punctulata nitida instructo; elytris thorace paullo latioribus, convexis, ad apicem arcuatim angustatis, sat fortiter punctato-striatis, interstitiis creberrime fortiter punctatis.

Long. 9 millim.

Hab. Senegambia (*Bocandé*).

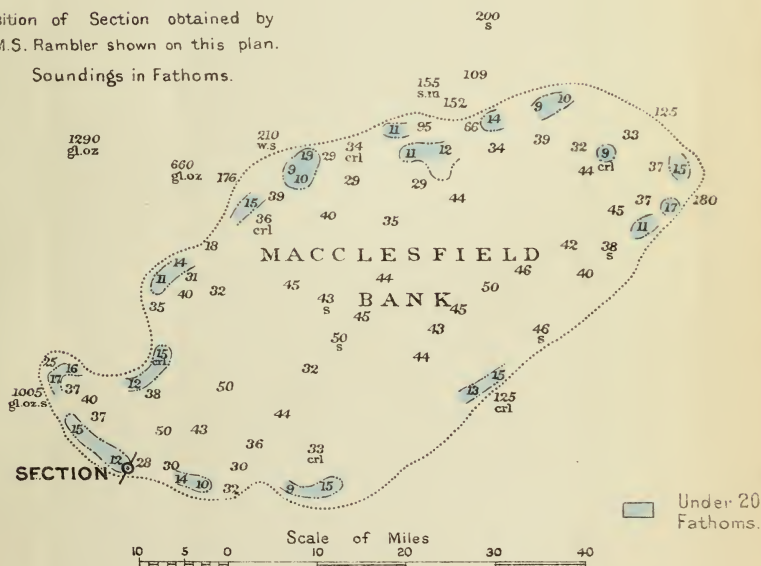
Dark smoky brown, with a slight purple-bronze shade. The head is evenly and closely punctured, the punctures small but very distinct, usually separated from each other by a diameter of a puncture; the clypeus has a very few punctures; the anterior margin is distinctly but not very deeply emarginate, the angles of the emargination rounded; and between this emargination and the posterior angle of the head there is a distinct angulation. The thorax is transverse, parallel-sided, with a slight sinuosity before the anterior angles, convex, closely punctured; the punctures at the sides are moderately large, separated from each other by about one quarter the diameter of a puncture; but towards the disk the punctures become a little smaller and the intervals proportionately greater; halfway towards the side about twenty-





Position of Section obtained by
H.M.S. Rambler shown on this plan.

Soundings in Fathoms.



Eyes almost in contact, the upper slightly in advance of the lower, which is on the lip; their major diameter is more than one sixth the head-length. On the coloured side only one nostril, in the form of a rather long slender tube situated in front of the lower eye; on the blind side two, the anterior of which is a short tube.

Mouth small, its angle nearer to the tip of the snout than to the gill-opening. Scales ctenoid on both sides. Two lateral lines on the coloured side, which branch and anastomose on the head; the upper, which ends immediately behind the vertical through the middle of the body, is separated from the lower, which is continuous to the base of the caudal, by ten rows of scales. No lateral line on the blind side. One ventral fin united to the anal by a broad membrane. The highest [middle] dorsal and anal rays considerably exceed the length of the snout.

Colours in life:—Left side uniform sepia-brown.

Length nearly 5 inches. Two specimens.

Off Ganjam coast, 33 fathoms; bottom sand.

These two species are closely allied, both belonging to the subgenus *Trulla*, Kaup.

LIII.—*Report on the Corals from the Tizard and Macclesfield Banks, China Sea.* By P. W. BASSETT-SMITH, Surgeon R.N.

[Concluded from p. 374.]

Section MADREPORARIA FUNGIDA.

Genus SIDERASTRÆA, Blainville.

Siderastræa?, sp. n.

A large, massive, incrusting specimen about 22 centim. in diameter, the upper surface uneven, with blunt rounded ridges, thickly covered with subpolygonal or compressed calices, from 3 to 6 millim. in width. Walls thin, but only visible here and there; they are apparently thick at the surface. The septa from 22 to 30 in number, very thin, plate-like, their sides minutely spined, the margins subentire or very minutely serrate, their upper edges above the calice-walls sometimes confluent with adjoining septa. Apparently no columella, but numerous dissepiments. Calices deep; the larger septa reaching nearly to the centre.

The absence of a columella and the character of the septa, which are very different from those of *Siderastræa galaxea*, renders the generic position of this form uncertain; and there is an apparent absence of synaptacula.

Tizard-Reef lagoon, depth 6 fath.

Genus FUNGIA, Lam.

Very few examples of this genus were obtained; the specimens were usually dead and incrustated by other organisms, so that their specific characters could not be determined.

Fungia scutaria?, Lam.

Fungia scutaria, Lam. Hist. des Anim. sans Vertèbr. t. ii. (2nd ed.) p. 372.

Tizard Bank, $\frac{1}{2}$ fath.

Genus PAVONIA, Lam.

Pavonia papyracea, Dana.

1848. *Pavonia papyracea*, Dana, Expl. Exp. Zooph. p. 323, pl. xxii. fig. 3.

Entire and fragmentary fronds of this species were obtained, some living, others dead and incrustated by Nullipores.

Macclesfield Bank, depth 40 fath.

Pavonia pretiosa, sp. n.

Growing in small bushy clumps of narrow, contorted, ribbon-like branches, which do not coalesce with each other. The branches about 5 millim. in width, of paper-like thinness, either flattened or slightly incurved, the under surface finely striate, the striæ crested by blunt tubercles, the margins of the fronds very spinous from the projecting ends of the septa. The upper surface flat, or more generally incurved so as to form an open channel, the calices in single series varying from 3 to 10 millim. apart, about 1 millim. wide, their immediate borders slightly elevated; from 12 to 16 septa, their sides very minutely spinous. A small blunt tuberculate columella.

The single living clump is 60 millim. in height by 75 in width.

From the Tizard Bank, depth 27 fath.

Pavonia ramosa, sp. n.

Corallum small, branching, the branches narrow, generally

upright, at their summits with open, divergent, finger-like processes. The branches thin, with strongly incurved margins, so that the outer or under surfaces are strongly convex, whilst their upper surfaces are deeply channelled, the margins spinous; the outer surfaces with well-marked costal striæ, which are crested with very minute spines. Calices in single series at the bottom of the channelled upper surface of the branches, from 3 to 10 millim. apart. Calices depressed, less than 1 millim. wide; from 8 to 12 septa. Columella inconspicuous, septa strongly and minutely spined laterally. The branches from 2.5 to 4 millim. in width.

This species differs from the preceding in the narrower, more incurved branches, the smaller calices with fewer septa, and the more strongly marked costæ of the under surface.

Macclesfield Bank, depth 26 fath.

Pavonia clivosa, Verrill.

1869. *Pavonia clivosa*, Verrill, Proc. Boston Soc. Nat. Hist. xii. p. 394; Trans. Connect. Acad. vol. i. (1866-71), p. 544, pl. ix. fig. 8.

Incrusting, forming large masses with an uneven lobate and ridged surface, consisting of successive crusts about 4 millim. thick. The upper surface crowded with calices about .75 millim. wide and 2 millim. from centre to centre. The calices with from 10 to 22 septa, large and small, the septa finely spined laterally, confluent as usually in this genus. The columella a blunted tubercle, sometimes compressed.

This specimen, about 200 millim. in length, agrees in so many respects with Verrill's description that it may fairly be referred to it. I do not, however, distinguish any of the dissepiments or "transverse septa" referred to by Verrill.

Tizard Bank, depth 8 to 10 fath.

Pavonia, sp.

A fragment of a frond, thin, finely striate on the under surface, the upper surface alone with calices, irregularly situated between raised ridges running towards edge of frond. Same mode of growth as *P. divaricata*, but the calices restricted to one surface.

Macclesfield Bank, 26½ fath.

Pavonia, sp. n.

Growing as small hollow stems partially incrusting round Annelid tubes, the under surface finely striate; outer surface nodose and uneven, with numerous calices very irregular in

position, sometimes in close contact, projecting slightly, circular or compressed, from 2 to 3 millim. wide; septa from 20 to 30, nearly sharp edges, laterally strongly echinulate, variable in this respect, sometimes showing dissepiments (?) or thin synaptacula extending between the septa; calices deep; columella tuberculate or compressed, so as to be partially laminate, the septa confluent.

This form may be merely an abnormal mode of growth of a laminate frond which has become curved, so that the margins united to form a hollow stem. It does not seem to correspond to any described species.

Macclesfield Bank, 20½ fath.

Genus CYCLOSERIS, Ed. & H.

Cycloseris cyclolites, Lam., sp.

1816. *Fungia cyclolites*, Lam. Hist. des Anim. sans Vertèbr. t. ii. p. 226, 2nd ed. p. 371.

1860. *Cycloseris cyclolites*, Ed. & H. Hist. Nat. des Corall. t. iii. p. 50, pl. D 12. fig. 3.

A single dead specimen 40 millim. in diameter and 10 millim. in height is perhaps referable to this species, though it is not more than half the height of typical examples of the species and the central fossette is more open.

From the Tizard Bank, depth 28 fath.

Cycloseris tenuis, Dana, sp.

1848. *Fungia tenuis*, Dana, Expl. Exp. Zooph. p. 290, pl. xviii. fig. 1.

1860. *Cycloseris hexagonalis*, Ed. & H. Hist. Nat. des Corall. t. iii. p. 51.

1881. *Cycloseris tenuis*, Moseley, 'Challenger' Rep. vol. ii. p. 191, pl. x. fig. 6 a.

There are several examples of this form, which range from 6 to 21 millim. in diameter and from 1·5 to 5 millim. in height. The specimens are free with the exception of a young individual, which has a short cylindrical stem and is growing on a sponge, and one dead specimen.

From the Tizard Bank, depth 27 to 28 fath.

Cycloseris sinensis, Ed. & H.

1851. *Cycloseris sinensis*, Ed. & H. Ann. des Sc. Nat. 3^e sér. t. xv. p. 112.

One specimen, free, 26 millim. wide by 3·3 millim. high, and an apparently young individual, 6 millim. wide, attached by a short stem.

From the Macclesfield Bank, depth 26 fath.

Cycloseris Freycineti, Ed. & H., sp.

1851. *Diaseris Freycineti*, Ed. & H. Ann. des Sc. Nat. 3 sér. t. xv. p. 118.

1886. *Cycloseris Freycineti*, Quelch, Chall. Rep. vol. xvi. pt. 46, p. 121.

Fragments of this species only.

From the Tizard Bank, depth 27 fath.

Cycloseris distorta, Michelin, sp.

1843. *Fungia distorta*, Mich. Mag. de Zool. t. v. Zooph. pl. v.

1886. *Cycloseris distorta*, Quelch, Chall. Rep. vol. xvi. pt. 46, p. 120.

Small fan-shaped specimens, dead, the largest 14 millim. in diameter and 3 millim. in height.

From the Tizard Bank; one specimen from a depth of 43 fath., another from 28 fath.

Genus LEPTOSERIS, Ed. & H.

Leptoseris striatus, MS.?

Two specimens, one living, one dead, were obtained from the Tizard Bank at a depth of 35 fath.

Leptoseris, sp.

A small pedunculated specimen, with a simple, oblong, cup-shaped calice 10 millim. long by 8 deep; the six primary septa slightly elevated near the centre, and between each pair six or seven smaller septa. It is probably a young form.

Tizard Bank, 28 fath.

Genus PHYLLASTRÆA, Dana.

Phyllastræa Okeni?, Ed. & H., sp.

1851. *Mycedium Okeni*, Ed. & H. Ann. des Sc. Nat. 3^e sér. t. xv. p. 132.

There is only a small fragment, from the edge of the frond of a specimen, not sufficient for satisfactory determination.

Tizard Bank, 32 fath.

Phyllastræa tubifex, Dana.

1848. *Phyllastræa tubifex*, Dana, Expl. Exp. Zooph. p. 270, pl. xvi. fig. 4.

Specimens living, but only small fragments.

Macclesfield Bank, 26½ fath.

Genus PACHYSERIS, Ed. & H.

Pachyseris levicollis, Dana, sp.

1848. *Agaricia levicollis*, Dana, Expl. Exp. Zooph. p. 338, pl. xxii. fig. 2.

A fragment of a frond, living.

Macclesfield Bank, 26½ fath.

Genus OXYPORA, Sav. Kent.

Oxypora contorta, Quelch.

1887. *Oxypora contorta*, Quelch, Chall. Rep. Reef-Corals, p. 129, pl. v. fig. 2.

Only some small fragments of a living specimen were obtained.

Macclesfield Bank, 26 fath.

Genus PSAMMOCORA, Dana.

Psammocora planipora, E. & H.

Psammocora planipora, Ed. & H. Monogr. des Poritides, p. 68.

The mode of branching and the thickness of the branches differ from the description given of this species; but the structure of the calices and septa fairly correspond.

Macclesfield Bank, depth 26 to 32 fathoms.

Psammocora, sp.

The mode of branching and the thickness of the branches correspond with the previous species, but the columella is papillary, and it might therefore come within the definition of *Stephanaria*, Verrill; but this character hardly seems to possess a generic importance. This species seems to have been confused with *P. planipora*, and the differences between them are microscopic in character.

Macclesfield Bank, 27 fath.

Psammocora Haimeana, Ed. & H.

Psammocora Haimeana, Ed. & H. Monogr. des Poritides.

1879. *Psammocora Haimeana*, Klunzinger, Die Korallth. des rothen Meeres, pt. iii. p. 81, pl. ix. fig. 5.

The only specimen is incrusting and is apparently in its early stages of growth.

From the lagoon, Tizard Reef, 6 fath.

Fungid Coral, gen. et sp. ind.

Corallum turbinate, attached, the upper surface flattened, convex, the lateral surface faintly costulated. The upper surface 23 millim. wide, with a principal subcentral calice about 2 millim. wide, with one septa; also two smaller subordinate calices. The septa confluent, extending quite to the edge of corallum, closely arranged, composed of nodular trabeculæ, which appear to remain perforate. Columella papillary, inconspicuous.

I do not find any recent genus in which this coral can be included. It would apparently belong to the family Plesioporitidæ of Prof. Duncan (Rev. Madrep., Journ. Linn. Soc., Zool. vol. xviii. p. 165). As there is only one specimen it cannot be sacrificed for sections.

From Tizard Bank, 6 fath.

Section MADREPORARIA PERFORATA.

Genus BALANOPHYLLIA, Searles Wood.

Balanophyllia parvula?, Moseley.

1881. *Balanophyllia parvula*, Moseley, Chall. Report, Zool. vol. ii. p. 194.

Tizard Bank, 50 fath.

Balanophyllia scabrosa?, Dana, sp.

1848. *Dendrophyllia scabrosa*, Dana, Expl. Exp. Zooph. p. 390, pl. xxvii. fig. 2.

Two specimens, both living when obtained.

Tizard Bank, 40 fath.

Genus DENDROPHYLLIA, Blainville.

Dendrophyllia gravis, Bruggeman, MS. ?

One large branch more than 30 centim. in height and a smaller branch were obtained. Only in the upper portion were the polyps alive; of a blackish tint.

This form is similar to specimens in the British Museum marked as above, which may be a MS. name, for I have not met with any printed description of the species.

Tizard Bank, 26 fath.

Genus MONTIPORA, Quoy & Gaimard.

Montipora papillosa, Lam., sp.

1816. *Agaricia papillosa*, Lam. Hist. Nat. des Anim. sans Vertèbr. t. ii. p. 243, 2nd ed. p. 382.

A single large explanate frond, in which the polyps are living only in patches.

Tizard Bank, depth 25 fath.

Montipora foliosa, Pallas, sp.

1766. *Madrepora foliosa*, Pallas, Elench. Zooph. p. 333.

Only a few small fragments of this form were obtained.

Macclesfield Bank, 20½ fath.

Montipora prolifica, Brugg., MS. ?

Macclesfield Bank, 26½ fath.

Montipora lima?, Lam., sp.

1816. *Agaricia lima*, Lam. Hist. Nat. des Anim. sans Vertèbr. t. ii. p. 243, 2nd ed. p. 382.

Only a small fragment of a thin frond, doubtfully referred to this species.

Macclesfield Bank, 26½ fath.

Montipora, sp.

Large plate-shaped expansion, about 12 millim. in thickness, the under surface partly naked, partly with wrinkled epitheca; upper surface thickly covered with spinous papillæ. Calices in the interspaces between these are nearly 1 millim. in width, with from six to nine septa.

Tizard Bank, depth 8½ fath.

Montipora Danæ, Ed. & H.

Montipora Danæ, Ed. & H. Monogr. des Poritides, p. 62.

Tizard Bank, ½ fath.

Montipora, sp.

Corallum very thin, explanate, not incrusting, about 1 to 1.5 millim. in thickness, very delicate porous upper surface. Calices small, short, about 1 millim. in width, with six septa. Approaches *M. lichen*, Dana, sp., but is much thinner and

not incrusting. The under surface with delicate concentric epitheca, not spinous.

Macclesfield Bank, 40 fath.

Montipora porosa, sp. n.

Corallum forming a thin spreading frond from 1 to 2 millim. in thickness; surface uneven; over the greater part of the frond calices are developed on both sides, but occasional patches of a concentrically-wrinkled non-spinous epitheca are present; calices few, irregularly scattered, not prominent, about 5 millim. wide; septa only represented by twelve subequal, nearly horizontal spines round the margin; coenenchyma minutely echinulate.

A single specimen taken alive.

Macclesfield Bank, 35 fath.

Montipora, sp.

Corallum incrusting, thin; upper surface uneven, with occasional rounded papillæ or tubercles. Calices about .75 millim. wide, with six septa and sometimes smaller intermediate septa. Coenenchyma finely echinulate.

Macclesfield Bank, depth 44 fath.

Genus TURBINARIA, Oken.

Turbinaria stellulata, Blainv., sp.

1834. *Astræopora stellulata*, Blainv., var.

A massive convex specimen; surface reddish brown. Calices irregularly arranged, 1 to 2 millim. apart; margins slightly elevated, circular, nearly 2 millim. in width, very deep; twenty-four subequal vertical septa; well developed trabecular columella filling the base of calices.

This form agrees fairly well with the descriptions of this species, but the calices are closer arranged.

Tizard Bank, 5 to 10 fathoms.

Genus MADREPORA, Linn.

In the collection are no less than thirty-two species of this genus, five of which were obtained in depths over 20 fath. and are all, I believe, new. Four of them were from the Macclesfield Bank, one from the Tizard Bank, and one was common to both; all these deep-water species were fragile, and one was particularly beautiful (*M. fragilis*).

Madrepora robusta, Dana.

1848. *Madrepora robusta*, Dana, Expl. Exp. Zooph. p. 475, pl. xxxix. fig. 3.

Tizard Bank, 5 fath.

Madrepora crebripora, Dana.

1848. *Madrepora crebripora*, Dana, Expl. Exp. Zooph. p. 470, pl. xxxi. fig. 1.

Sand-Kay, Tizard Bank, $\frac{1}{2}$ fath.

Madrepora secunda, Dana.

1848. *Madrepora secunda*, Dana, Expl. Exp. Zooph. p. 481, pl. iv a. fig. 4.

Tizard Bank, 5 fath.

Madrepora scabrosa, Quelch.

1887. *Madrepora scabrosa*, Quelch, Chall. Rep. vol. xvi. p. 152, pl. x. fig. 2.

Tizard Bank, $6\frac{1}{2}$ fath.

Madrepora horrida, Dana.

Tizard Bank, 2 fath.

Madrepora Ehrenbergii, Ed. & H.

1860. *Madrepora Ehrenbergii*, Ed. & H. Hist. Nat. des Cor. t. iii. p. 143.

Tizard Bank, 5 fath.

Madrepora dendrum, sp. n.

Arborescent, subcespitose; stem solid, strong; surface finely echinulo-striate, bearing curved, simple or subproliferous, gradually tapering branchlets, $2\frac{1}{2}$ centim. long, 3 centim. thick, with compressed nariform calices, tending to form into rows showing two very long septa; apical calices 1 millim., exsert, stem distinct; under surface shows branches sinuously curved, with spreading margin, not coalescing, with few immersed calices.

Macclesfield and Tizard Banks, 20 to 27 fath.

Madrepora compressa, sp. n.

Pedunculated from wide base, dendriform, flattened and oblique, cespitose, branches coalescing; upper surface bearing

rosette-like bunches of short tubiform calices with twelve septa; apical calices a little prominent, 1·5 millim. wide; under surface with few immersed calices.

Tizard Bank, 5 fath.

Madrepora, sp. n.

Near to *M. effusa*, Dana.

Macclesfield Bank, 26½ fath.

Madrepora plantaginea, Lam.

1836. *Madrepora plantaginea*, Lam. Hist. Nat. des Anim. sans Vertèbr. t. ii. p. 447.

Tizard Bank, 6 fath.

Madrepora valida, Dana.

1848. *Madrepora valida*, Dana, Expl. Exp. Zooph. p. 461, pl. xxxv. fig. 1.

Tizard Bank, 6 fath.

Madrepora paxilligera, Dana.

1848. *Madrepora paxilligera*, Dana, Expl. Exp. Zooph. p. 452, pl. xxiv. fig. 1.

Nam-Yit, Tizard, 1 fath.

Madrepora pyramidalis, Klunz.

1879. *Madrepora pyramidalis*, Klunz. Die Korallth. des roth. Meeres, Th. ii. p. 12, pl. i. fig. 2 &c.

Tizard and Macclesfield Banks, 2 fath.; also var. *depressa*, Kl.

Madrepora seriata, Ehrenberg, sp.

1834. *Heteropora seriata*, Ehr. Beit. z. Kenntn. der Corallenth. des roth. Meeres, p. 113.

Tizard Bank, 2 fath.

Madrepora tenuis, Dana.

1848. *Madrepora tenuis*, Dana, Expl. Exp. Zooph. p. 451.

Tizard Bank, 1 fath.

Madrepora nasuta, Dana.

1848. *Madrepora nasuta*, Dana, Expl. Exp. Zooph. p. 453, pl. xxxiv. fig. 2.

Tizard Bank, 5 fath.

Madrepora effusa, Dana.

1848. *Madrepora effusa*, Dana, Expl. Exp. Zooph. p. 455.

Tizard Bank, 5 fath.

Madrepora globiceps, Dana.

1848. *Madrepora globiceps*, Dana, Expl. Exp. Zooph. p. 454, pl. xxxiv. fig. 3.

Tizard Bank, 7 fath.

Madrepora acervata, Dana.

1848. *Madrepora acervata*, Dana, Expl. Exp. Zooph. p. 460, pl. xxxiv. fig. 43.

Tizard Bank, $8\frac{1}{2}$ fath.

Madrepora aculeus, Dana.

1848. *Madrepora aculeus*, Dana, Expl. Exp. Zooph. p. 450, pl. xxxii. fig. 6.

Tizard Bank, $8\frac{1}{2}$ fath.

Madrepora corymbosa, Lam.

Madrepora corymbosa, Lam. Hist. Nat. des Anim. sans Vert. t. ii. 2nd ed. p. 447.

Tizard Bank, $5\frac{1}{2}$ to $9\frac{1}{2}$ fath.

Madrepora prostrata, Dana.

1848. *Madrepora prostrata*, Dana, Expl. Exp. Zooph. p. 447, pl. xxxiii. fig. 1.

Tizard Bank, $6\frac{1}{2}$ fath.

Madrepora cytherea?, Dana.

1848. *Madrepora cytherea*, Dana, Expl. Exp. Zooph. p. 441, pl. xxxii. fig. 3.

Tizard Bank, 6 fath.

Madrepora efflorescens, Dana.

1848. *Madrepora efflorescens*, Dana, Expl. Exp. Zooph. p. 441, pl. xxxiii. fig. 6.

Tizard Bank, 6 fath.

Madrepora spicifera (var. *abbreviata*), Dana.

1848. *Madrepora spicifera* (var. *abbreviata*), Dana, Expl. Exp. Zooph. p. 442, pl. xxxiii. figs. 4, 5, and pl. xxxi. fig. 6.

Tizard Bank, 5 fath.

Madrepora hyacinthus, Dana.

1848. *Madrepora hyacinthus*, Dana, Expl. Exp. Zooph. p. 444, pl. xxxii. fig. 2.

Tizard Bank, $9\frac{1}{2}$ fath.

Madrepora vastula?, Quelch.

Madrepora vastula, Quelch, Chall. Rep. vol. xvi. p. 165, pl. x. fig. 4.

Tizard Bank, 7 fath.

Madrepora flabelliformis, Ed. & H., var.

1860. *Madrepora flabelliformis*, Ed. & H., var., Hist. Nat. des Corall. t. iii. p. 156.

Tizard Bank, 2 fath.

Madrepora labrosa, Dana.

1848. *Madrepora labrosa*, Dana, Expl. Exp. Zooph. p. 486, pl. xliii. fig. 3, pl. xxxi. fig. 10.

Tizard Bank, 5 fath.

Madrepora fragilis, sp. n.

Corallum shortly pedunculate, spreading horizontally, cespitose, delicate; branches radiating, at first round, becoming flattened towards margin, but never coalescing; surface finely echinulate; upper surface giving off closely long, simple, or proliferous calices, sinuously curved, either direct or from short thickened branchlets; length of calices up to 15 millim., tapering very slightly, with circular aperture, with thin lip and six delicate septa; under surface bare, convex, except for a few rather large immersed calices; at margin a few branchlets, very delicate, much compressed, and proliferous.

This is a very beautiful coral, and differs essentially from *M. speciosa*, to which it is nearest allied, by having branches never coalescing and the tubular calices being almost the same thickness throughout.

Tizard Bank, 27 fath.

Madrepora Rambleri, sp. n.

Corallum pedunculated, spreading horizontally, cespitose, delicate; branches much and closely divided, compressed and anastomosing; upper surface thickly crowded with short branchlets about 1 centim. high, with few appressed nariform calices terminating in one, two, three, or four long, tubular,

proliferous, curved calices, often 15 centim. long, not dilated at base; aperture 1 millim. round, lip rather thick, septa six; under surface shows branches and branchlets uniting to form irregular and close network almost entirely bare of calices, which are immersed; surface minutely echinulate. Corallum dense, ends of calices tipped with lilac.

This species differs from "*speciosa*" in having the long tubular calices rising from short stems with appressed nari-form calices, and the calices not being dilated at the base. From "*fragilis*" it is quite distinct.

Macclesfield Bank, $26\frac{1}{2}$ fath.

Madrepora Rambleri, var.

Living, Macclesfield Bank, $20\frac{1}{2}$ fath.

Genus PORITES, Lam.

Porites mucronata, Dana.

1848. *Porites mucronata*, Dana, Expl. Exp. Zooph. p. 558, pl. liv. fig. 2.

Tizard Bank, $\frac{1}{2}$ fath.

Porites conferta, Dana.

1848. *Porites conferta*, Dana, Expl. Exp. Zooph. p. 557.

Itu-Aba, Tizard Bank, $2\frac{1}{2}$ fath.

Porites lutea, Quoy & Gaimard.

1833. *Porites conglomerata*, var. *lutea*, Quoy & Gaimard, Voyage de l'Astrol., Zooph. p. 249.

Tizard Bank, $\frac{1}{2}$ fath.

Porites tenuis, Verrill.

1865. *Porites tenuis*, Verrill, Proc. Essex Inst. vol. v. pt. 3, p. 25.

Sand-Kay Reef, Tizard Bank, $\frac{1}{2}$ fath.

Porites arenosa, Esper, sp.

1797. *Madrepora arenosa*, Esper, Pflanz. t. i. Suppl. p. 80.

Lagoon, Tizard Reef, 2 to 6 fath.

Porites lichen?, Dana.

1848. *Porites lichen*, Dana, Expl. Exp. Zooph. p. 566, pl. lvi. fig. 4.

Garvan Reef, Tizard Bank, $2\frac{1}{2}$ fath.

Porites solida, Forsk., sp.

1775. *Madrepora solida*, var. *a*, Forsk. Descrip. Anim. p. 131.

Itu-Aba, Tizard Reef, 2 fath.

Porites crassa?, Quelch.

Porites crassa, Quelch, Chall. Rep. Reef-Corals, p. 183, pl. xi. figs. 2, 2a.

Tizard Bank, 7 fath.

Genus RHODARÆA, Ed. & H.

Rhodaræa gracilis, Ed. & H.

1860. *Rhodaræa gracilis*, Ed. & H. Hist. Nat. des Cor. t. iii. p. 184.

One large globular specimen, with two thirds of its surface covered by a compact cœnenchyma. The corallites are not more than 2 millim. in diameter, and they thus correspond rather with this species than with *R. calycularis*, Lamk., sp., in which, according to Ed. & H., they are from 3 to 4 millim. in width. The description of the species given by Ed. & H. is very meagre.

From the Tizard Bank, Itu-Aba, depth 2 fath.

The specimen is in one place incrustated by *Heliopora cœrulea*.

Rhodaræa (?) *Lagrenii*?, Ed. & H.

Rhodaræa (?) *Lagrenii*, Ed. & H. Monogr. des Poritides, p. 43; iid. Hist. Nat. des Cor. t. iii. p. 184.

The specimen doubtfully referred to this species is ramose; the branches about 10 millim. thick, uneven, nodose, furcating, their lower portions completely enveloped by wrinkled compact cœnenchyma; the calices oblique, about 4 millim. wide.

Macclesfield Bank, 40 fath.

Genus ALVEOPORA, Quoy & Gaimard.

Alveopora dædalea, Forsk., sp.

1775. *Madrepora dædalea*, Forsk. Descrip. Anim. in itin. Orient. observ. p. 133, pl. xxxvii. fig. B.

1879. *Alveopora dædalea*, Klunzinger, Die Korallth. des rothen Meeres, Th. ii. p. 47, pl. v. figs. 25, 26.

Growing in branches and in lobate masses, the lower portions of which are covered with a delicate, wrinkled, non-perforate, epithelial membrane. Polyps only alive at summit of specimens.

Macclesfield Bank, at depths of 27 to 40 fath.

Ann. & Mag. N. Hist. Ser. 6. Vol. vi.

Alveopora retepora, Ell. & Sol., sp.

1786. *Madrepora retepora*, Ell. & Sol. Zoophytes, p. 166, pl. liv. figs. 3, 4, 5.

1846. *Alveopora retepora*, Dana, Expl. Exp. Zocph. p. 512.

Branching, also in irregularly lobate masses. Corallites subpolygonal, varying considerably in size, the smaller, 2 to 3 millim. in width, intermingled with the larger, which range from 4 to 5 millim. and occasionally to 6 millim.

Macclesfield Bank, 35 fath.

Alveopora Tizardi, sp. n.

Corallum growing in flattened irregularly lobate expansions; under surface uneven and covered by delicate wrinkled epitheca. Calices polygonal, from 1 to 1.3 millim. in diameter; twelve septa, of the usual spinous character, alternate longer and shorter, but none reach the centre of the calice; calice shallow, the space occupied by the septal spines; walls very cribrate, so that the corallum is light and spongy in character.

This species is mainly characterized by the small size of the corallites. Only a single specimen obtained.

Tizard Bank, 27 fath.

LIV.—On new *Longicorn Coleoptera* from Madagascar.

By C. J. GAHAN, M.A.

THE species described in the following paper were for the most part contained in a small collection recently sent to Mr. Meyer-Darcis, who brought them to me for determination. The types of all the species will be placed in the British Museum collection.

Closterus longiramis, sp. n.

C. flabellicorni (♂) similis, sed differt colore multo pallidiore; oculis subtus plus approximatis; articulo tertio antennarum quam quarto brevior, ramo elongato munito.

Long. 29, lat. ad humeros 10 mm.

Hab. Madagascar (*G. F. Scott Elliot, Esq.*).

Head and prothorax dark brown; prothorax thickly punctured and glabrous above, furnished with a short tawny fringe at the anterior and posterior borders; the lateral margins